

WHAT IS CLAIMED IS:

1. A method of mailing parcels and envelopes using an automated shipping machine, comprising the steps of:
 - 5 receiving payment information from a customer;
 - receiving package type information identifying a parcel or envelope to be mailed;
 - weighing said parcel or envelope to be mailed;
 - determining length, width and height dimensions of
 - 10 said parcel or envelope to be mailed;
 - receiving shipping information from said customer including at least a destination of said parcel or envelope to be mailed;
 - computing from said package type information,
 - 15 shipping information, and length, width, height and weight measurements of said parcel or envelope, a delivery date and cost for delivery of said parcel or envelope to said destination via each delivery service option available to said customer;
 - 20 receiving an indication of the delivery service option chosen by the customer;
 - providing a shipping label including at least said destination printed thereon;
 - receiving said parcel or envelope with said
 - 25 shipping label applied thereto;
 - validating that the parcel or envelope received in said receiving step is the parcel or envelope for which said shipping label was printed in said shipping label providing step;
 - 30 securely storing said parcel or envelope in a secure storing area inaccessible to said customer when it is determined in said validating step that the parcel or envelope received in said receiving step is the parcel or envelope for which said shipping label was printed in said
 - 35 shipping label providing step;
 - providing said customer with a shipping receipt for an amount including at least the cost of delivering said

parcel or envelope to said destination via the delivery service chosen by said customer; and

storing said parcel or envelope in said secure storing area until subsequently picked up by a commercial
5 delivery person.

2. A method as in claim 1, wherein said payment information receiving step includes the steps of reading the customer's credit or debit card, validating that payment may be received from said credit or debit card, and
10 receiving customer identification information from either said customer or said credit or debit card.

3. A method as in claim 1, wherein said weighing step includes the step of placing said parcel or envelope on a conveyor belt in a temporary storage area,
15 said conveyor belt having a scale disposed thereunder for weighing said parcel or envelope.

4. A method as in claim 3, wherein said dimensions determining step includes the steps of emitting sound waves from respective sensors disposed within said
20 temporary storage area along each dimension of said parcel or envelope, receiving sound waves in each dimension which have bounced off of said parcel or envelope, and calculating the respective dimensions of said parcel or envelope in accordance with time differences between the emission and
25 receipt of said sound waves along each of said respective dimensions.

5. A method as in claim 3, wherein said dimensions determining step includes the steps of measuring voltage changes in respective light curtain sensors disposed
30 within said temporary storage area along each dimension of said parcel or envelope and calculating the respective dimensions of said parcel or envelope in accordance with the measured voltage changes outputted by said light curtain

sensors.

6. A method as in claim 3, wherein said dimensions determining step includes the steps of holographically scanning said parcel or envelope with a 5 holographic scanner and calculating the respective dimensions of said parcel or envelope in accordance with the measured voltage changes outputted by said holographic scanner.

7. A method as in claim 6, wherein said 10 dimensions determining step includes the step of providing a shipping label includes the further step of printing a tracking bar code onto said label, and wherein said step of holographically scanning said parcel or envelope includes the step of reading said tracking bar code with said 15 holographic scanner.

8. A method as in claim 3, wherein said dimensions determining step includes the steps of scanning said parcel or envelope with a laser scanner and calculating the respective dimensions of said parcel or envelope in 20 accordance with the measured voltage changes outputted by said laser scanner.

9. A method as in claim 1, wherein said shipping information receiving step includes the step of automatically determining a city and state of said 25 destination from zip code information provided by said customer.

10. A method as in claim 1, wherein said delivery date and cost computing step includes the step of determining whether the computed delivery date falls on a 30 Saturday, Sunday, holiday or other nonservice day and adjusting the delivery date accordingly.

11. A method as in claim 1, wherein said shipping label providing step comprises the step of printing said destination and tracking information on said shipping label.

5 12. A method as in claim 11, wherein said shipping label providing step comprises the step of printing a tracking bar code on said shipping label.

10 13. A method as in claim 1, wherein said receiving step comprises the step of accepting said parcel or envelope in a temporary storage area defined by an outer door and an inner door, said outer door separating said temporary storage area from said customer and said inner door separating said temporary storage area from said secure storing area.

15 14. A method as in claim 13, wherein said validating step comprises the steps of reweighing said parcel or envelope within said temporary storage area and comparing a measured weight determined in said reweighing step with a measured weight determined in said weighing step.

20 15. A method as in claim 13, wherein said validating step comprises the steps of repeating said dimensions determining step within said temporary storage area and comparing dimensions determined during each dimensions determining step.

25 16. A method as in claim 13, wherein said validating step comprises the step of detecting whether said parcel or envelope has been placed in said temporary storage area.

30 17. A method as in claim 13, wherein said validating step comprises the steps of scanning said parcel

or envelope within said temporary storage area to determine whether code indicia identifying the parcel or envelope for which said shipping label was printed in said shipping label providing step can be found on said parcel or envelope.

5 18. A method as in claim 13, wherein said validating step includes the step of preventing closure of said outer door when it is determined in said validating step that the parcel or envelope received in said receiving step is not the parcel or envelope for which said shipping
10 label was printed in said shipping label providing step, and said step of securely storing said parcel or envelope includes the step of locking said outer door when it is determined in said validating step that the parcel or envelope received in said receiving step is the parcel or
15 envelope for which said shipping label was printed in said shipping label providing step.

19. A method as in claim 18, wherein said step of securely storing said parcel or envelope includes the steps of opening said inner door and moving said parcel
20 or envelope from said temporary storage area into said secure storing area.

20. A method as in claim 19, wherein said step of securely storing said parcel or envelope includes the step of automatically stacking said parcels or envelopes
25 within said secure storing area.

21. A method as in claim 1, wherein said shipping receipt is provided to said customer in said shipping receipt providing step only after said parcel or envelope has been received in said secure storing area.

30 22. A method as in claim 1, comprising the further step of printing a manifest at predetermined intervals, said manifest listing at least all parcels or

envelopes received by said automated shipping machine since a previous pickup at said automated shipping machine by said commercial delivery person.

23. A method as in claim 1, comprising the
5 further step of printing a manifest in response to a print
request from said commercial delivery person, said manifest
listing at least all parcels or envelopes received by said
automated shipping machine since a previous pickup at said
automated shipping machine by said commercial delivery
10 person.

24. A method as in claim 1, comprising the
further step of loading manifest data into a portable data
storage device in possession of said commercial delivery
person, said manifest data including a listing of at least
15 all parcels or envelopes received by said automated shipping
machine since a previous pickup at said automated shipping
machine by said commercial delivery person.

25. A method as in claim 1, comprising the
further step of receiving package accept and reject
20 information from said commercial delivery person.

26. A method as in claim 1, comprising the
further step of automatically sending an electronic record
of all parcels or envelopes received by said automated
shipping machine during a predetermined time period to a
25 remote monitoring location.

27. A method as in claim 1, comprising the
further steps of calculating a density of said parcel or
envelope from said length, width, height and weight
measurements of said parcel or envelope and providing an
30 indication of said density on said shipping label.

28. A method as in claim 1, comprising the

further step of periodically performing system diagnostics on said automated shipping machine, said step of periodically performing system diagnostics comprising the steps of:

5 polling the status of system components of said automated shipping machine; and

 if an error is detected in said polling step, performing a predetermined error correction procedure on each system component for which said error was detected, re-
10 polling the status of system components of said automated shipping machine, and if an error is detected in said re-polling step, shutting down said automated shipping machine and automatically transferring diagnostic data including error data to a remote monitoring location.

15 29. A method as in claim 1, comprising the further steps of monitoring operation of software of said automated shipping machine and automatically rebooting said software when possible software lockup is detected.

30. An automated shipping machine for use in
20 mailing parcels and envelopes, comprising:

 means for receiving payment information from a customer;

 a scale for weighing a parcel or envelope to be mailed;

25 means for determining length, width and height dimensions of said parcel or envelope to be mailed;

 processing means for receiving package type information identifying said parcel or envelope to be mailed, shipping information from said customer including at least a destination of said parcel or envelope to be mailed, for computing from said package type information, shipping information, weight information from said scale, and length, width, and height measurements from said dimensions determining means, a delivery date and cost for delivery of
30 said parcel or envelope to said destination via each
35

delivery service option available to said customer, and for receiving an indication of the delivery service option desired by the customer;

- means responsive to said processing means for
5 printing a shipping label including at least said destination printed thereon and for printing a shipping receipt for an amount including at least the cost of delivering said parcel or envelope to said destination via the delivery service chosen by said customer;

10

- a validation area for accepting said parcel or envelope, said validation area being inaccessible by said customer and comprising means for validating whether the parcel or envelope received therein is the parcel or
15 envelope for which said shipping label was printed by said printing means; and

a secure storage area adjacent said validation area for securely storing said parcel or envelope validated by said validating means, said secure storage area storing
20 said validated parcel or envelope until said parcel or envelope is subsequently picked up by a commercial delivery person.

31. An automated shipping machine as in claim
30, wherein said means for receiving payment information
25 comprises a magnetic card reader.

32. An automated shipping machine as in claim
30, further comprising an outer door separating said validation area from said customer and an inner door separating said validation area from said secure storage
30 area.

33. An automated shipping machine as in claim
32, wherein said scale is disposed in said validation area and said outer door is unlocked by said processing means upon receipt of said payment information, thereby rendering

said scale accessible by said customer.

34. An automated shipping machine as in claim
33, wherein said validating means comprises said scale.

35. An automated shipping machine as in claim
5 32, wherein said dimensions determining means is disposed in
said validation area and is activated when said parcel or
envelope is placed at a predetermined orientation within
said validation area.

36. An automated shipping machine as in claim
10 35, wherein said validating means comprises said dimensions
determining means.

37. An automated shipping machine as in claim
35, wherein said dimensions determining means comprises
respective sensors disposed within said validation area
15 along each dimension of said parcel or envelope for emitting
sound waves and for receiving sound waves in each dimension
which have bounced off of said parcel or envelope, said
processing means calculating the respective dimensions of
said parcel or envelope from detected time differences
20 between the emission and receipt of said sound waves along
each of said respective dimensions.

38. An automated shipping machine as in claim
35, wherein said dimensions determining means comprises
respective light curtain sensors disposed within said
25 validation area along each dimension of said parcel or
envelope, said processing means calculating the respective
dimensions of said parcel or envelope from measured voltage
changes outputted by said light curtain sensors.

39. An automated shipping machine as in claim
30 35, wherein said dimensions determining means comprises a
holographic scanner disposed within said validation area for

holographically scanning said parcel or envelope, said processing means calculating the respective dimensions of said parcel or envelope from measured voltage changes outputted by said holographic scanner.

5 40. An automated shipping machine as in claim
39, wherein said shipping label printing means prints a tracking bar code on said shipping label and said holographic scanner and said holographic scanner reads said tracking bar code from said label when said parcel or
10 envelope is in said validation area.

41. An automated shipping machine as in claim 35, wherein said dimensions determining means comprises a laser scanner disposed within said validation area for scanning said parcel or envelope, said processing means calculating the respective dimensions of said parcel or
15 envelope from measured voltage changes outputted by said laser scanner.

42. An automated shipping machine as in claim 35, further comprising detecting means within said validation area for detecting whether said parcel or envelope is placed within said validation area at said predetermined orientation.
20

43. An automated shipping machine as in claim 42, wherein said validation means comprises said detecting
25 means.

44. An automated shipping machine as in claim 30, wherein said validation means comprises means for scanning said parcel or envelope to determine whether code indicia identifying the parcel or envelope for which said
30 shipping label was printed by said printing means can be found on said parcel or envelope.

45. An automated shipping machine as in claim 32, wherein said processing means prevents closure of said outer door when said validation means determines that the parcel or envelope received in said validation area is not 5 the parcel or envelope for which said shipping label was printed by said printing means, and said processing means locking said outer door when said validation means determines that the parcel or envelope received in said validation area is the parcel or envelope for which said 10 shipping label was printed by said printing means.

46. An automated shipping machine as in claim 30, wherein said validation area further comprises means for opening said inner door and a powered conveyor for transporting said parcel through said opened inner door into 15 said secure storage area when said validating means has determined that the parcel or envelope in said validation area is the parcel or envelope for which said shipping label was printed by said printing means.

47. An automated shipping machine as in claim 20 30, wherein said processing means determines a city and state of said destination from zip code information provided by said customer.

48. An automated shipping machine as in claim 30, wherein said processing means determines whether the 25 computed delivery date falls on a Saturday, Sunday, holiday or other nonservice day and adjusts the delivery date accordingly.

49. An automated shipping machine as in claim 30, wherein said printing means prints a tracking bar code 30 as well as said destination on said shipping label.

50. An automated shipping machine as in claim 30, further comprising an electromechanical stacking device

for automatically stacking said parcels or envelopes within said secure storage area.

51. An automated shipping machine as in claim 30, wherein said printing means prints said shipping receipt 5 only after said parcel or envelope has been received in said secure storage area.

52. An automated shipping machine as in claim 30, further comprising a manifest printer in said secure storage area for printing, at predetermined intervals, a 10 manifest listing at least all parcels or envelopes received by said automated shipping machine since a previous pickup at said automated shipping machine by said commercial delivery person.

53. An automated shipping machine as in claim 15 30, further comprising a manifest printer in said secure storage area for printing, in response to a print request from said commercial delivery person, a manifest listing at least all parcels or envelopes received by said automated shipping machine since a previous pickup at said automated 20 shipping machine by said commercial delivery person.

54. An automated shipping machine as in claim 30, further comprising means for loading manifest data into a portable data storage device in possession of said commercial delivery person, said manifest data including a 25 listing of at least all parcels or envelopes received by said automated shipping machine since a previous pickup at said automated shipping machine by said commercial delivery person.

55. An automated shipping machine as in claim 30 30, further comprising an input device for providing package accept and reject information to said processing means from said commercial delivery person.

56. An automated shipping machine as in claim 30, further comprising means for automatically electronically sending an electronic record of all parcels or envelopes received by said automated shipping machine 5 during a predetermined time period to a remote monitoring location.

57. An automated shipping machine as in claim 30, wherein said processing means calculates a density of said parcel or envelope from said length, width, height and 10 weight measurements of said parcel or envelope and said printing means prints an indication of said density on said shipping label.

58. An automated shipping machine as in claim 30, further comprising diagnostic means for periodically 15 polling the status of at least said scale, said dimensions determining means, said printing means and said validating means and, if an error is detected during said polling, for (1) performing a predetermined error correction procedure on each system component of said automated shipping machine for 20 which said error was detected, (2) re-polling the status of at least said scale, said dimensions determining means, said printing means and said validating means, and (3) if an error is detected during said re-polling, shutting down said automated shipping machine and automatically transferring 25 diagnostic data including error data to a remote monitoring location.

59. An automated shipping machine as in claim 30, further comprising a watchdog timer for monitoring operation of software of said automated shipping machine and 30 automatically rebooting said software when possible software lockup is detected.

60. A system for accepting and storing parcels or envelopes for subsequent pickup by a commercial

carrier, comprising:

an outer housing having inner and outer surfaces, said inner surface defining a storage area which is constructed and sized to store a multiplicity of parcels;

5 deposit means, connected to said outer housing, for permitting a customer to deposit the parcel into said storage area, said deposit means comprising a conveyor for moving the parcel into said storage area;

10 inputting means for inputting information relating to the destination of the parcel from the customer;

weighing means for weighing the parcel when the parcel is positioned on said conveyor; and

15 control means for calculating a shipment fee for the parcel, said control means being in communication with said weighing means and said information inputting means.

61. A system according to claim 60, wherein said weighing means is constructed and arranged to weigh said conveyor, and to calculate the weight of the parcel by comparing the weight of said conveyor without the parcel 20 thereon to the weight of said conveyor with the parcel thereon.

62. A system for accepting and storing parcels or envelopes for subsequent pickup by a commercial carrier, comprising:

25 an outer housing having inner and outer surfaces, said inner surface defining a storage area which is constructed and sized to store a multiplicity of parcels;

secure deposit means, connected to said outer housing, for permitting a customer to deposit the parcel 30 into said storage area, said secure deposit means comprising a holding space that is defined in part by a support surface and an outer door, said outer door being constructed and arranged to deny access to said holding space after a parcel has been deposited on said support surface, said secure 35 deposit means further comprising means for moving the

package from said holding space to said storage area;

 inputting means for inputting information relating to the destination of the parcel from the customer;

 weighing means for weighing the parcel when the
5 parcel is positioned in said holding space, whereby a
customer will not be able to interfere with said weighing;
and

 control means for calculating a shipment fee for
the parcel, said control means being in communication with
10 said weighing means and said information inputting means.

63. A system according to claim 62, further comprising dimensioning means for measuring dimensions of said package when said package is in said holding space, said control means further being in communication with said
15 dimensioning means, whereby the package is automatically weighed and measured in a tamper-free environment.

64. A system according to claim 62, wherein said weighing means is constructed and arranged to weigh said support platform with the package, and calculates the
20 weight of the package by comparing the weight of said platform with and without the package.

65. A system according to claim 64, wherein said support platform is part of said moving means.

66. A system according to claim 65, wherein
25 said moving means comprises a conveyor having an endless belt, and said support platform comprises an upper run of said belt.

67. A system for accepting and storing parcels or envelopes for subsequent pickup by a commercial
30 carrier, comprising:

 an outer housing having inner and outer surfaces, said inner surface defining a storage area which is

constructed and sized to store a multiplicity of parcels;

a scale for weighing a parcel which a customer intends to ship;

means for inputting information relating to the 5 destination of the parcel from the customer;

control means for calculating a shipment fee for the parcel, said control means being in communication with said scale and said information inputting means;

deposit means, enabled by said control means, for 10 permitting a customer to securely deposit the parcel into said storage area; and

stacking means in said storage area for stacking the parcel in said storage area, whereby the volume of said storage area will be efficiently utilized.

15 68. A system according to claim 67, wherein said stacking means comprises a platform for supporting the parcel, and means for lifting and inclining said platform so as to deposit the parcel on top of other parcels that have already been deposited in said storage area.

20 69. A system according to claim 68, wherein said lifting and inclining means comprises a hinge for mounting said platform for pivotal movement, and a drive mechanism for moving said platform about said hinge.

25 70. A system according to claim 67, wherein said control means is constructed and arranged to actuate said stacking means.

71. A system according to claim 67, further comprising a slide for guiding the parcel from said deposit means to said stacking means.

30 72. A method of mailing parcels and envelopes using an automated shipping machine, comprising the steps of:

- receiving payment information from a customer;
receiving package type information identifying a
parcel or envelope to be mailed;
weighing said parcel or envelope to be mailed;
5 shipping information from said customer including
at least a destination of said parcel or envelope to be
mailed;
computing from said package type information,
shipping information, and weight information, a delivery
10 date and cost for delivery of said parcel or envelope to
said destination via each delivery service option available
to said customer;
receiving an indication of the delivery service
option desired by the customer;
15 printing a shipping label including at least said
destination printed thereon;
printing a shipping receipt for an amount including
at least the cost of delivering said parcel or envelope to
said destination via the delivery service chosen by said
20 customer;
validating receipt of said parcel or envelope as
the parcel or envelope for which said shipping label was
printed; and
storing a validated parcel or envelope in a secure
25 storage area until said parcel or envelope is subsequently
picked up by a commercial delivery person.

73. A method as in claim 72, comprising the
further step of maintaining a consignee file containing
shipping information for each customer, said consignee file
30 being accessible by said customer for providing said
shipping information for computing said delivery date and
cost for delivery of said parcel or envelope to said
destination via each delivery service option available to
said customer.

mailing parcels and envelopes, comprising:

means for receiving payment information from a customer;

a scale for weighing a parcel or envelope to be mailed;

processing means for receiving package type information identifying said parcel or envelope to be mailed, shipping information from said customer including at least a destination of said parcel or envelope to be mailed,

for computing from said package type information, shipping information, and weight information from said scale, a delivery date and cost for delivery of said parcel or envelope to said destination via each delivery service option available to said customer, and for receiving an indication of the delivery service option desired by the customer;

means responsive to said processing means for printing a shipping label including at least said destination printed thereon and for printing a shipping receipt for an amount including at least the cost of delivering said parcel or envelope to said destination via the delivery service chosen by said customer;

and

means for validating receipt of said parcel or envelope as the parcel or envelope for which said shipping label was printed by said printing means, whereby a validated parcel or envelope is taken by an attendant for storage in a secure storage area until said parcel or envelope is subsequently picked up by a commercial delivery person.

75. An automated shipping machine as in claim 74, wherein said processing means further comprises a consignee file for keeping a record of shipping information for each customer, said consignee file being accessible by said customer for providing said shipping information for computing said delivery date and cost for delivery of said

parcel or envelope to said destination via each delivery service option available to said customer.